Amendments to the Claims

Please cancel Claim 52. Please amend Claims 4, 47, and 51. Please add new Claims 53 and 54. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

What is claimed is:

1. (Withdrawn) An isolated nucleic acid molecule encoding a protein with a RING-finger domain and 6 NHL-motifs wherein the protein is associated with Lafora's disease.

2. (Withdrawn) A nucleic acid according to Claim 1 having a sequence comprising SEQ ID NO:1 or SEQ ID NO:3.

3. (Withdrawn) An isolated nucleic acid molecule according to Claim 1 comprising
   (a) a nucleic acid sequence comprising SEQ ID NO:1 or SEQ ID NO:3, wherein T can also be U;
   (b) a nucleic acid sequence complementary to (a);
   (c) a nucleic acid sequence that has substantial sequence homology to a nucleic acid sequence of (a) or (b);
   (d) a nucleic acid sequence that is an analog of a nucleic acid sequence of (a), (b) or (c); or
   (e) a nucleic acid sequence that hybridizes to a nucleic acid sequence of (a), (b), (c) or (d) under stringent hybridization conditions.

4. (Currently amended) A method of detecting the presence of, or predisposition to, Lafora's disease in a human, wherein the Lafora's disease is associated with a mutation in the EPM2B gene, comprising detecting a C to G change at nucleotide number 205 in the EPM2B gene sequence comprising SEQ ID NO:1, wherein the presence of a C to G change at nucleotide number 205 in the EPM2B gene sequence comprising SEQ ID NO: 1 indicates the presence of, or predisposition to, Lafora's disease in the human.[[.]]

5-33. (Canceled)

34. (Withdrawn) An isolated protein containing a RING-finger domain and six NHL domains which protein is associated with Lafora's disease.

35. (Withdrawn) A protein according to Claim 34 having the amino acid sequence comprising SEQ ID NO:2 or SEQ ID NO:4.

36. (Withdrawn) A method for detecting Lafora's disease comprising detecting a mutation in a protein according to Claim 34.

37. (Withdrawn) A method according to Claim 36 comprising detecting a mutation in the EPM2B protein as indicated in Table 1.

38. (Withdrawn) A kit for carrying out the method of Claim 4 comprising reagents for the detection of a mutation in a nucleic acid sequence comprising SEQ ID NO:1 or SEQ ID NO:3.

39. (Withdrawn) A kit for carrying out the method of Claim 36 comprising reagents for the detection of a mutation in a protein sequence comprising SEQ ID NO:2 or SEQ ID NO:5.

40-41. (Canceled)

42. (Withdrawn) A method for detecting the presence or absence of Lafora's disease comprising detecting a mutation in a protein according to claim 35.

43. (Previously presented) A method of detecting the presence or absence of a mutation in a nucleic acid in a test sample obtained from a human, wherein the test sample contains the EPM2B gene, the method comprising the steps of:

(a) analyzing the test sample containing the EPM2B gene to determine the nucleic acid sequence of the gene;

(b) comparing the nucleic acid sequence of the gene in the test sample to the nucleic acid sequence set forth in SEQ ID NO:1; and

(c) determining the differences, if any, between the sequence of the EPM2B gene in the test sample and the nucleic acid sequence set forth in SEQ ID NO:1, thereby detecting the presence or absence of a mutation in the EPM2B gene of the test sample.

44-46 (Canceled)

47. (Currently amended) A method of detecting the presence of an EPM2B gene in a human comprising analyzing a nucleic acid test sample obtained from the human for the presence of said EPM2B gene using a nucleic acid probe consisting of all, or a part of, SEQ ID NO.1 that hybridizes under stringent conditions to the EPM2B gene, wherein said EPM2B gene consists of SEQ ID NO: 1.

48. (Canceled)

49. (Withdrawn) The method of Claim 4 further comprising detecting one or more mutations in said EPM2B gene selected from the group consisting of:

(a) a T to A change at nucleotide number 76 in the EPM2B gene sequence comprising SEQ ID NO:1;

(b) a deletion of nucleotides GA at nucleotide positions 1048 and 1049 in the EPM2B gene sequence comprising SEQ ID NO:1;

(c) a deletion of nucleotides AG at nucleotide positions 468 and 469 in the EPM2B gene sequence comprising SEQ ID NO:1;

(d) a deletion of nucleotide G at nucleotide number 992 in the EPM2B gene sequence comprising SEQ ID NO:1;

(e) a deletion of 10 bp at nucleotide positions 373 to 382 in the EPM2B gene sequence comprising SEQ ID NO:1;

(f) a deletion of 32 bp at nucleotide positions 661 to 692 in the EPM2B gene sequence comprising SEQ ID NO:1;

(g) a T to C change at nucleotide number 260 in the EPM2B gene sequence comprising SEQ ID NO:1;

(h) a A to C change at nucleotide number 905 in the EPM2B gene sequence comprising SEQ ID NO:1;

(i) a T to C change at nucleotide number 98 in the EPM2B gene sequence comprising SEQ ID NO:1;

(j) an insertion of 2 Ts at nucleotide number 892 in the EPM2B gene sequence comprising SEQ ID NO:1;

(k) a G to A change at nucleotide number 436 in the EPM2B gene sequence comprising SEQ ID NO:1;

(l) a deletion of nucleotide T at nucleotide number 1100 in the EPM2B gene sequence comprising SEQ ID NO:1;

(m) a deletion of nucleotide T at nucleotide position 606 in the EPM2B gene sequence comprising SEQ ID NO:1;

(n) a A to T change at nucleotide number 923 in the EPM2B gene sequence comprising SEQ ID NO:1;

(o) a G to T change at nucleotide number 580 in the EPM2B gene sequence comprising SEQ ID NO:1;

(p) a G to T change at nucleotide number 199 in the EPM2B gene sequence comprising SEQ ID NO:1;

(q) a G to A change at nucleotide number 838 in the EPM2B gene sequence comprising SEQ ID NO:1;

(r) a C to T change at nucleotide number 676 in the EPM2B gene sequence comprising SEQ ID NO:1;

(s) a deletion of nucleotide A at nucleotide position 468 in the EPM2B gene sequence comprising SEQ ID NO:1; and

(t) a deletion of nucleotide C at nucleotide position 204 in the EPM2B gene sequence comprising SEQ ID NO:1.

50. (Previously presented) The method of Claim 43 wherein the test sample is amplified using suitable PCR primer sequences prior to analysis.

51. (Currently amended) The method of Claim 43 ~~further comprising detecting~~ wherein the one or more mutations detected in said EPM2B gene are selected from the group consisting of:

(a) a C to G change at nucleotide number 205 in the EPM2B gene sequence comprising SEQ ID NO:1;

(b) a T to A change at nucleotide number 76 in the EPM2B gene sequence comprising SEQ ID NO:1;

(c) a deletion of nucleotides GA at nucleotide positions 1048 and 1049 in the EPM2B gene sequence comprising SEQ ID NO:1;

(d) a deletion of nucleotides AG at nucleotide positions 468 and 469 in the EPM2B gene sequence comprising SEQ ID NO:1;

(e) a deletion of nucleotide G at nucleotide number 992 in the EPM2B gene sequence comprising SEQ ID NO:1;

(f) a deletion of 10 bp at nucleotide positions 373 to 382 in the EPM2B gene sequence comprising SEQ ID NO:1;

(g) a deletion of 32 bp at nucleotide positions 661 to 692 in the EPM2B gene sequence comprising SEQ ID NO:1;

(h) a T to C change at nucleotide number 260 in the EPM2B gene sequence comprising SEQ ID NO:1;

(i) a A to C change at nucleotide number 905 in the EPM2B gene sequence comprising SEQ ID NO:1;

(j) a T to C change at nucleotide number 98 in the EPM2B gene sequence comprising SEQ ID NO:1;

(k) an insertion of 2 Ts at nucleotide number 892 in the EPM2B gene sequence comprising SEQ ID NO:1;

(l) a G to A change at nucleotide number 436 in the EPM2B gene sequence comprising SEQ ID NO:1;

(m) a deletion of nucleotide T at nucleotide number 1100 in the EPM2B gene sequence comprising SEQ ID NO:1;

(n) a deletion of nucleotide T at nucleotide position 606 in the EPM2B gene sequence comprising SEQ ID NO:1;

(o) a A to T change at nucleotide number 923 in the EPM2B gene sequence comprising SEQ ID NO:1;

(p) a G to T change at nucleotide number 580 in the EPM2B gene sequence comprising SEQ ID NO:1;

(q) a G to T change at nucleotide number 199 in the EPM2B gene sequence comprising SEQ ID NO:1;

(r) a G to A change at nucleotide number 838 in the EPM2B gene sequence comprising SEQ ID NO:1;

(s) a C to T change at nucleotide number 676 in the EPM2B gene sequence comprising SEQ ID NO:1;

(t) a deletion of nucleotide A at nucleotide position 468 in the EPM2B gene sequence comprising SEQ ID NO:1; and

(u) a deletion of nucleotide C at nucleotide position 204 in the EPM2B gene sequence comprising SEQ ID NO:1.

52. (Canceled)

53. (New) A method of detecting the presence of, or predisposition to, Lafora's disease in a human, wherein the Lafora's disease is associated with a mutation in the EPM2B gene, comprising:

a) obtaining a nucleic acid sample which contains the EPM2B gene from the human;

b) sequencing the nucleic acids in the sample to detect a C to G change at nucleotide number 205 in the EPM2B gene sequence comprising SEQ ID NO:1; and

c) identifying the human as having Lafora's disease, or a predisposition to Lafora's disease, if the presence of a C to G change at nucleotide number 205 in the EPM2B gene sequence comprising SEQ ID NO: 1 is detected.

54. (New) The method of Claim 53 further comprising detecting one or more mutations in said EPM2B gene selected from the group consisting of:

(a) a T to A change at nucleotide number 76 in the EPM2B gene sequence comprising SEQ ID NO:1;

(b) a deletion of nucleotides GA at nucleotide positions 1048 and 1049 in the EPM2B gene sequence comprising SEQ ID NO:1;

(c) a deletion of nucleotides AG at nucleotide positions 468 and 469 in the EPM2B gene sequence comprising SEQ ID NO:1;

(d) a deletion of nucleotide G at nucleotide number 992 in the EPM2B gene sequence comprising SEQ ID NO:1;

(e) a deletion of 10 bp at nucleotide positions 373 to 382 in the EPM2B gene sequence comprising SEQ ID NO:1;

(f) a deletion of 32 bp at nucleotide positions 661 to 692 in the EPM2B gene sequence comprising SEQ ID NO:1;

(g) a T to C change at nucleotide number 260 in the EPM2B gene sequence comprising SEQ ID NO:1;

(h) a A to C change at nucleotide number 905 in the EPM2B gene sequence comprising SEQ ID NO:1;

(i) a T to C change at nucleotide number 98 in the EPM2B gene sequence comprising SEQ ID NO:1;

(j) an insertion of 2 Ts at nucleotide number 892 in the EPM2B gene sequence comprising SEQ ID NO:1;

(k) a G to A change at nucleotide number 436 in the EPM2B gene sequence comprising SEQ ID NO:1;

(l) a deletion of nucleotide T at nucleotide number 1100 in the EPM2B gene sequence comprising SEQ ID NO:1;

(m) a deletion of nucleotide T at nucleotide position 606 in the EPM2B gene sequence comprising SEQ ID NO:1;

(n) a A to T change at nucleotide number 923 in the EPM2B gene sequence comprising SEQ ID NO:1;

(o) a G to T change at nucleotide number 580 in the EPM2B gene sequence comprising SEQ ID NO:1;

(p) a G to T change at nucleotide number 199 in the EPM2B gene sequence comprising SEQ ID NO:1;

(q) a G to A change at nucleotide number 838 in the EPM2B gene sequence comprising SEQ ID NO:1;

(r) a C to T change at nucleotide number 676 in the EPM2B gene sequence comprising SEQ ID NO:1;

(s) a deletion of nucleotide A at nucleotide position 468 in the EPM2B gene sequence comprising SEQ ID NO:1; and

(t) a deletion of nucleotide C at nucleotide position 204 in the EPM2B gene sequence comprising SEQ ID NO:1.